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A New Chaenopsid Fish, *Emblemaria hyltoni*, from Isla Roatán, Honduras[1]

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ABSTRACT

A new chaenopsid blenny, *Emblemaria hyltoni*, is described from five male specimens taken off Dixon Cove, Isla Roátan, Honduras. The remarkably prolonged, filamentous first dorsal-fin spine, which in length exceeds two-thirds of the standard length, distinguishes this species from all other species of *Emblemaria*. *E. hyltoni* best agrees with *E. caldwelli* Stephens, 1970 and *E. piratula* Ginsburg and Reid, 1942, in the possession of only two obvious segmented pelvic-fin rays, but differs from them in numerous other features. New material of *E. caldwelli* is reported from Belize and new material of *E. piratula* is reported from off western Florida.

ABSTRACTO

Se describe una nueva especie de la familia Chaenopsidae, *Emblemaria hyltoni*, de cinco especímenes colectados cerca de Dixon Cove, Isla Roatán, Honduras. *E. hyltoni* se distingue de las otras especies del género por su primera espina dorsal notablemente prolongada, y su altura sobrepasando dos terceras de la longitud estándar. *E. hyltoni* se asemeja a *E. caldwelli* Stephens 1970, y a *E. piratula* Ginsburg y Reid 1942, por su aleta ventral con solamente dos obvios radios segmentos, pero puede distinguerse de esas dos especias por otras características. También, se reportan nuevos ejemplos de *E. caldwelli* desde la costa de Belize, y de *E. piratula* desde la costa oeste de Florida.

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INTRODUCTION

Among the fishes taken by the Miskito Coast Expedition (1975) to Honduras and Nicaragua are five specimens of a previously undescribed chaenopsid blenny belonging to the genus *Emblemaria* Jordan and Gilbert, 1883. *Emblemaria* is amphiamerican in distribution and contains 12 recognized species, five in the eastern Pacific and seven in the western Atlantic. None of the species is amphiamerican (Stephens 1963, 1970). The eastern Pacific species were most recently reviewed by Stephens (1963) and the western Atlantic species also by Stephens (1970). The Atlantic species of *Emblemaria* may be divided into two groups on the basis of the number of obvious, segmented pelvic-fin rays: (1) in *E. piratula* Ginsburg and Reid, 1942, and in *E. caldwelli* Stephens, 1970, the third soft pelvic-fin ray is vestigial, so that only the first two soft rays are easily visible; (2) in the remaining five western Atlantic species (as in all of the eastern Pacific species) the third soft pelvic-fin ray is normal and easily visible (Stephens, 1963, 1970). The new species described in this paper, *E. hyltoni*, agrees with *E. caldwelli* and *E. piratula* in possessing only two obvious, segmented pelvic-fin rays. In this paper we describe this form, known only from off Dixon Cove, Isla Roatán, Honduras, and compare it with new material of *E. caldwelli* from Belize and *E. piratula* from off western Florida.

MATERIALS AND METHODS

Specimens recorded in this paper are deposited in the collections of the California Academy of Sciences (CAS), San Francisco; Field Museum of Natural History (FMNH), Chicago; Florida State Museum, University of Florida (UF), Gainesville; University of South Alabama (USA), Mobile; and National Museum of Natural History (USNM), Washington, D. C.

Measurements were made to 0.1 mm. with needle-point dividers except for the following measurements made to 0.01 mm. with an ocular micrometer on a Wild M5 microscope: upper jaw length, eye (fleshy orbit), snout length, bony interorbital width, caudal peduncle depth, caudal peduncle length, length of terminal dorsal-fin spine, length of anteriormost soft dorsal-fin ray, orbital cirrus length, nasal cirrus length. Except for the use of the ocular micrometer for measuring very small distances, methods of taking counts and measurements follow those of Stephens (1963, 1970). Snout length includes the premaxillary. Lengths are given as the standard length, S. L., in mm. Other measurements are reported as thousandths of the S. L.

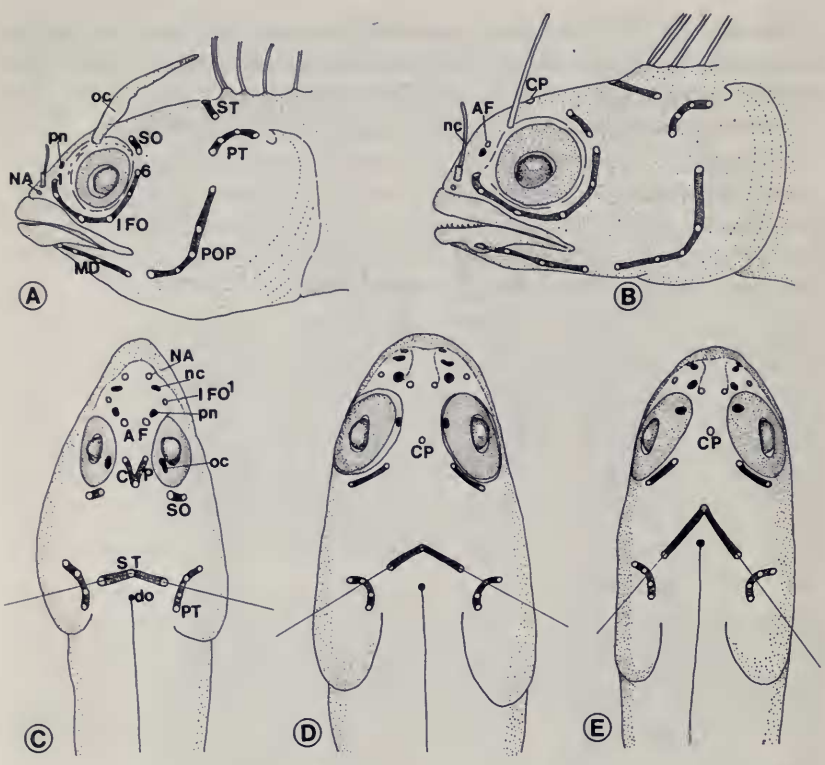

FIG. 1. Cephalic laterosensory pores in three species of *Emblemaria*, **A**, **C**, *E. piratula*, USA 2578, station 100-74, 19.0 mm. S.L. **B** and **E**, *E. hyltoni*, paratype, FMNH 80413, 22.1 mm. S. L. **D**. *E. caldwelli*, FMNH 80414, 23.8 mm. S. L. Pore series (see text) connected by heavily stippled bands. Pore abbreviations: MD, mandibular series; POP, preopercular series, PT, posttemporal series; ST, supratemporal series; IFO, infraorbital series; SO, supraorbital series; CP, commissural pore(s); AF, anterofrontal pore; NA, nasal pore. Other abbreviations: nc, nasal cirrus; pn, posterior nostril, oc, orbital cirrus; do, dorsal origin. Drawing by R. K. Johnson.

At least three competing systems of nomenclature are available for the description of pores in the cephalic laterosensory system of chaenopsids (Smith-Vaniz and Palacio, 1974; Stephens, 1963, 1970). None of these systems is completely applicable to the three species of *Emblemaria* discussed in this paper, but rather than add to the confusion by offering a fourth, independent nomenclatural scheme, we have chosen to follow Smith-Vaniz and Palacio (1974) where possible and Stephens (1970) where necessary. We recognize six series of cephalic laterosensory pores and give individual names to an additional three pores or sets of pores (fig. 1).

Mandibular (MD) series: a series of pores on the lower jaw beginning with the pore nearest the dentary symphysis and terminating with the pore just anterior to the quadrate-articular joint; four pores are present in this series in all specimens examined.

Preopercular (POP) series: a series of pores distributed in a strongly-curving arc along the main axis of the preopercle, from just posterior to the fourth mandibular pore to a pore at or nearly at the level of a horizontal line through the center of the eye; five pores are present in this series in all specimens examined.

Posttemporal (PT) series: a series of pores distributed in a strongly-curving arc from just above and anterior to the fifth (dorsalmost) preopercular pore to just anterior to a lunate hollow in the dorsal margin of the opercle; this series may correspond to either the posttemporal or lateral supratemporal series described for *Acanthemblemaria* by Smith-Vaniz and Palacio (1974), but only one series of pores is present in this position in the three species of *Emblemaria* discussed herein; four pores are present in this series in all specimens examined.

Supratemporal (ST) series: a series of three pores distributed around the base of the first dorsal-fin spine, one pore single and at dorsal midline, the other pores paired, one on each side, posterior to midline pore, and anterior or posterior to the base of the first dorsal-fin spine. This series corresponds to the median predorsal supratemporal series of Smith-Vaniz and Palacio (1974).

Infraorbital (IFO) series: a series of six pores distributed as three pores on each infraorbital bone; this series corresponds to the anterior and posterior infraorbital series of Smith-Vaniz and Palacio (1974).

Supraorbital (SO) series: a set of two pores on the orbital flange of each frontal bone in all specimens examined.

The following pores or pore sets are given individual names.

Commissural (CP) pore(s): in *E. caldwelli* and *E. hyltoni* the commissural pore is single and centered on the dorsal midline just posterior to the narrowest width of the interorbital region of the frontals; in *E. piratula* there are three pores in this position, two pores in lateral position, one on each frontal at the narrowest portion of the interorbital area, and one pore in dorsal midline lying on a transverse line connecting the posterior margin of each eye (fig. 1).

Anterofrontal (AF) pores: a set of two pores, one on each side, each pore over the anterior terminus of each frontal, at and just medial to the posterior termination of the medial bony ridge on each

nasal bone; neither Smith-Vaniz and Palacio (1974) nor Stephens (1970) provided names for these pores.

Nasal (NA) pores: a set of two pores, one on each side, each pore at anteromedial terminus of each nasal bone, just anterior to the anterior nostril.

Except where indicated above or discussed below, all three species dealt with in this paper are very similar in the pattern and number of cephalic laterosensory pores. A valuable character in separating *E. hyltoni* from *E. caldwelli* and *E. piratula* involves the angle formed by the three supratemporal pores (figs. 1,4). This angle was measured by arranging a specimen so that the plane defined by the points at the center of each pore was parallel to the plane of the drawing surface. The position of the three pores was then traced onto paper using a camera lucida on a Wild M5 microscope. The center of each pore was then connected to the center of one or two other pores as shown in Figure 1, and the angle thereby defined was measured with a protractor.

Emblemaria hyltoni n. sp. Figure 2. Filament blenny.

Holotype.—FMNH 80412, 22.9 mm. S.L., a male, collected with Pro-noxfish ichthyocide in 30.5 m. of water on the vertical coral face of the drop-off just outside the entrance to Dixon Cove, Isla Roatán, Honduras, on May 4, 1975, by G. S. Glodek, D. W. Greenfield, T. A. Greenfield, and R. K. Johnson.

Paratypes.—Four males, collected with the holotype, 20.4-22.1 mm. S. L. CAS 33511, 1 (20.4); FMNH 80413, 2 (20.7-22.1); USNM 214839, 1 (22.0).

Diagnosis.—A species of *Emblemaria* with 21-23 dorsal-fin spines, 14-16 soft dorsal-fin rays, 2 anal-fin spines, 23 soft anal-fin rays, and 14 pectoral-fin rays; third soft pelvic-fin ray vestigial (only two obvious segmented rays); first (anteriormost) dorsal-fin spine extremely prolonged and filamentous, length of first dorsal-fin spine exceeding two-thirds of the S.L. (67.6-75.1 per cent S.L.); lateral supratemporal pores posterior to transverse line through dorsal-fin insertion. The combination of these characters distinguishes *E. hyltoni* from all other known species of *Emblemaria.* Detailed comparisons of *E. hyltoni* with *E. caldwelli* and *E. piratula* follow the description of *E. hyltoni.*

Description.—Based on the holotype and four paratypes. Meristic characters are presented in Table 1. Vertebrae 40-42 (41 in holotype). Morphometric data are presented in Table 2.

TABLE 1. Meristic characters in three species of *Emblemaria*.

A. Dorsal Fin

Species	Locality	Dorsal Spines						Dorsal Soft Rays				Total Dorsal Rays					
		18	19	20	21	22	23	13	14	15	16	33	34	35	36	37	N
caldwelli	Belize	-	-	-	9	38	1	14	32	2	-	-	1	18	29	-	48
caldwelli[1]	Jamaica, Bahamas	-	-	-	-	10	-	3	6	1	-	-	-	3	6	1	10
hyltoni	Roatan	-	-	-	1	3	1	-	3	1	1	-	-	-	2	3	5
piratula	W. Florida	2	7	-	-	-	-	-	3	4	2	3	6	-	-	-	9

B. Anal Fin, Soft Rays

C. Pectoral fin

D. Total rays: dorsal + anal fins

Species	Locality	21	22	23	N	13	14	N	56	57	58	59	60	61	62	N
caldwelli	Belize	3	43	2	48	-	20	20	-	-	4	18	24	2	-	48
caldwelli[1]	Jamaica, Bahamas	-	7	3	10	-	10	10	-	-	-	2	6	1	1	10
hyltoni	Roatan	-	-	5	5	-	5	5	-	-	-	-	-	2	3	5
piratula	W. Florida	9	-	-	9	9	-	9	3	6	-	-	-	-	-	9

[1] Counts from Stephens (1970) except for values for two paratypes examined by us.

TABLE 2. Comparison of proportional measurement data for two species of *Emblemaria.* Values expressed as thousandths of the S. L. and given as the range for each species. Values in parentheses are those of the holotype of *E. hyltoni.* Values for specimens of *E. caldwelli* from Jamaica and the Bahamas are from Stephens (pers. comm., see text).

Character	*E. hyltoni* ♂	*E. caldwelli* ♂	*E. caldwelli* ♂	*E. caldwelli* ♀
Locality	Roatan	Belize	Jamaica, Bahamas	Bahamas
N, (range in S. L.)	5 (20.4-22.9)	10 (18.2-27.2)	6 (16.2-25.3)	4 (18.9-26.3)
Head length	271 - 290 (271)	257 - 302	269 - 346	277 - 328
Head depth	162 - 172 (162)	160 - 176	162 - 209	152 - 175
Head width	131 - 147 (131)	147 - 175	131 - 156	132 - 147
Upper jaw length	127 - 135 (131)	107 - 138	138 - 205	142 - 159
Eye diameter (fleshy orbit)	73 - 79 (73)	66 - 78	81 - 110	80 - 101
Snout length	54 - 60 (54)	50 - 62	68 - 99	80 - 90
Interorbital width (bony)	26 - 28 (26)	19 - 24	36 - 56	36 - 46
Predorsal length	179 - 199 (179)	191 - 225	193 - 241	198 - 254
Preanal length	462 - 483 (476)	469 - 514	482 - 530	478 - 534
Caudal peduncle depth	76 - 88 (87)	78 - 100	86 - 105	87 - 101
Caudal peduncle length	73 - 84 (73)	77 - 106	87 - 105	87 - 101
Pectoral length	123 - 144 (144)	158 - 173	177 - 215	143 - 206
Pelvic length	267 - 306 (306)	213 - 264	249 - 356	259 - 291
Length of first dorsal spine	676 - 751 (751)	151 - 187		
Length of second dorsal spine	284 - 367 (314)	167 - 213	194 - 216[1]	179 - 212[1]
Length of last dorsal spine	84 - 101 (101)	46 - 78		
Length of first dorsal soft ray	100 - 114 (110)	88 - 108		
Orbital cirrus, length	77 - 115 (107)	78 - 113	91 - 153	95 - 132
Nasal cirrus, length	51 - 61 (51)	54 - 71	51 - 103	67 - 83

[1]Reported as "dorsal spine length."

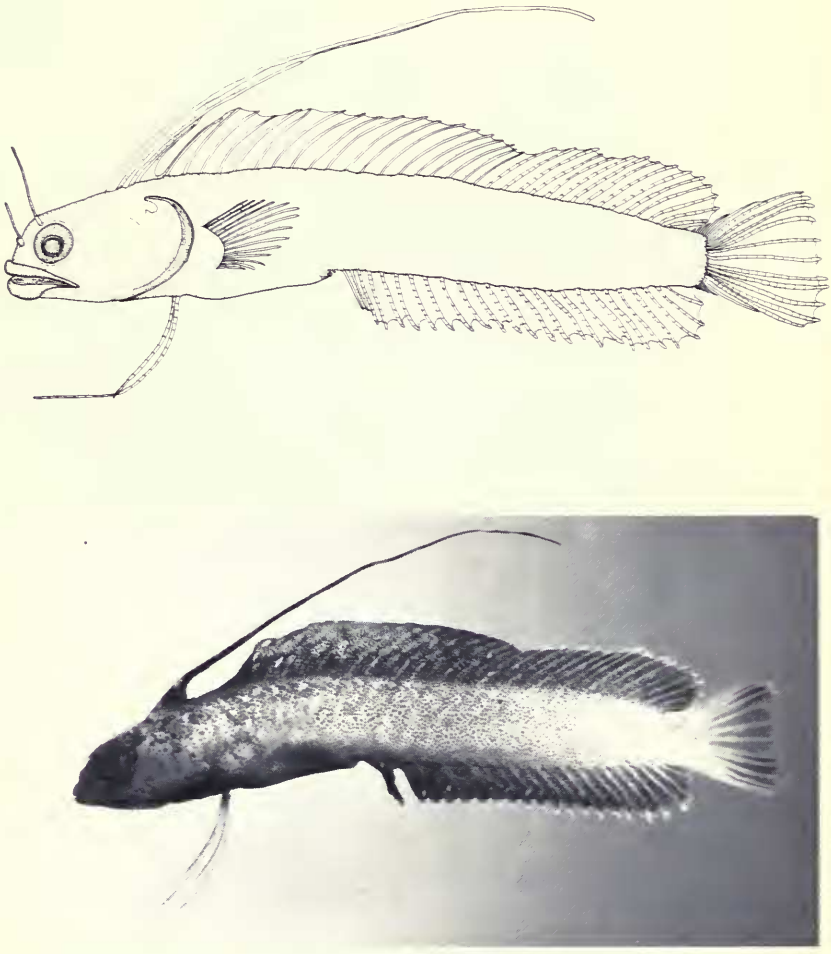

FIG. 2. *Emblemaria hyltoni*, new species, holotype, FMNH 80412, 22.9 mm. S. L. Drawing by R. K. Johnson.

Body elongate, compressed, greatest depth under bases of 8th to 12th dorsal-fin spines. Head small, dorsal profile rising steeply and obliquely to anterodorsal margin of orbit, thereafter rising gently to dorsal-fin insertion. Snout short, dorsal surface with two parallel longitudinal bony ridges marking medial border of each nasal bone. Nasals separated by a dorsomedial, shallow, trough-like depression. Surface of head lacking spines, prominent sensory papillae, and distinctive markings or ornamentation. Anterior nostril tubular,

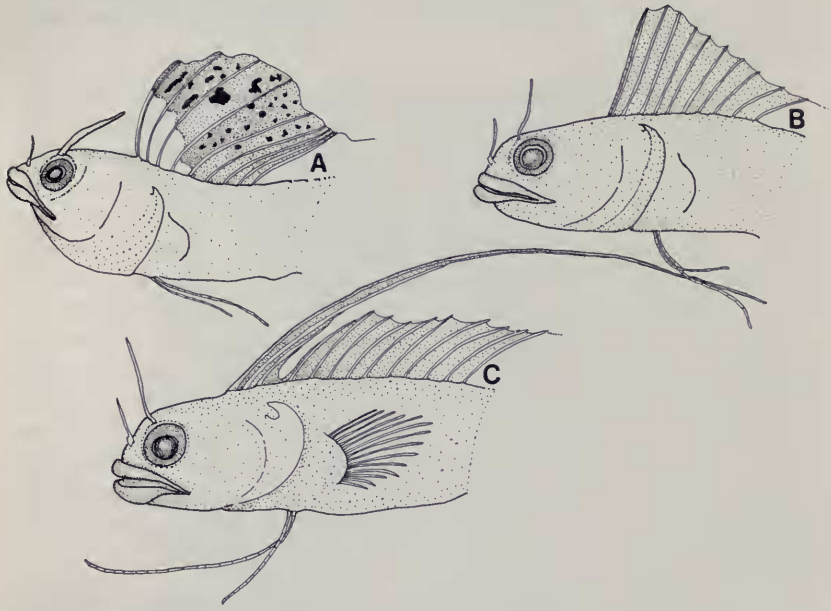

FIG. 3. Comparison of anterior portion of spinous dorsal fin in three species of *Emblemaria*. A, *E. piratula*, USA 2578, station 100-74, 19.0 mm. S. L. B, *E. caldwelli*, FMNH 80414, 21.7 mm. S. L. C, *E. hyltoni*, holotype, FMNH 80412, 22.9 mm. S.L. Drawing by R. K. Johnson.

situated over anterior end of concavity containing nasal rosette; concavity bounded medially by nasal bone and laterally by anterior infraorbital bone. Posterior nostril pore-like, well-separated from anterior nostril, situated over posteromedial boundary of nasal concavity and just anterolateral to anterofrontal pore. Nasal cirrus elongate but simple (fig. 2), arising from distal margin of posterior wall of anterior nostril. Orbital cirrus elongate but simple (fig. 2), nearly twice the length of nasal cirrus, arising from over eye just anterior to midpoint of dorsal margin of eye. Tips of branchiostegal rays extending dorsad above opercle and nearly to dorsal-fin spine bases, separated by a vertical distance less than the diameter of eye lens. Branchiostegal rays and membranes forming entire functional posterior border of gill covers.

Upper and lower jaws with fleshy, protuberant lips. Jaw teeth numerous, small, apparently uniserial. Palatine teeth equal in size to all but anteriormost premaxillary teeth (which are slightly larger), uniserial, numbering 10 and 12 respectively in largest para-

type and holotype. Vomerine teeth exceedingly minute, difficult to see, questionably numbering 5 and 2 respectively in largest paratype and holotype.

Dorsal fin not markedly high and sail-like except for first two spines (figs. 2,3). First dorsal-fin spine extremely prolonged and filamentous, 67.6-75.1 per cent S.L. Second dorsal-fin spine much prolonged, closely attached to first, slightly less than half its length (28.4-36.7 per cent S.L.). All subsequent dorsal-fin spines less than one-fifth the length of first. Bases of first three dorsal-fin spines noticeably closer to each other than are bases of any subsequent pairs. Interspace between bases of third and fourth spines greater than interspace between bases of any subsequent pairs. Dorsal-fin membrane between third and fourth spines incised nearly to body (fig. 2). Other dorsal-fin spines gradually increasing in length until 13th to 15th spine, then gradually decreasing in length to last spine, which is the shortest, and noticeably shorter than the first soft dorsal-fin ray. Dorsal-fin soft rays gradually increasing in length until fifth before last, then successively and markedly decreasing in length. Ultimate soft ray the shortest dorsal-fin element.

Anal-fin spines invariably two, shorter and more slender than all soft anal-fin rays except the last. Membranes of both dorsal and anal fins slightly incised between successive elements, more pronounced in anal fin. Last rays of dorsal and anal fins attached by a membrane to caudal peduncle.

Pectoral fins markedly shorter than pelvic fins. Length of longest pelvic-fin ray divided by length of longest pectoral-fin ray = 1.97-2.26 (2.12 in holotype). Appressed pectoral fins not reaching beyond a vertical through base of 12th dorsal-fin spine. Appressed pelvic fins reaching to or beyond base of second soft anal-fin ray. Pores. - Mandibular, 4. Preopercular, 5. Posttemporal, 4. Supratemporal, 3. Infraorbital, 6. Supraorbital, 2. Commissural, 1. Anterofrontal, 1. Nasal, 1. Number of pores given for each side except for dorsomedial commissural and supratemporal series.

Color in alcohol.—Body light brown to tan, generally covered with numerous, fine melanophores but melanophores much more numerous on head and anterior trunk than on trunk posterior to anal-fin origin. Few melanophores on caudal peduncle and caudal-fin bases. Melanophores not notably concentrated into stripes, bars, or blotches on head or body. First three dorsal-fin spines densely pigmented with black, more-or-less arranged in bands on distal half of first spine. Pectoral fins pigmented only at bases of rays.

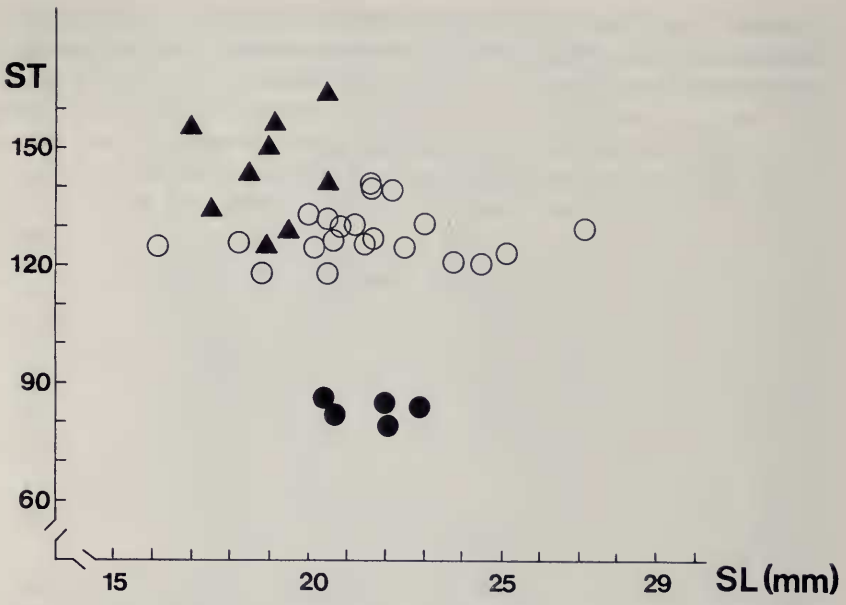

FIG. 4. Comparison of angle between supratemporal pores in three species of *Emblemaria*. Angle defined in Figure 1C, D, E. Ordinate: value of angle between supratemporal pores in degrees. Abscissa: S. L. in mm. Closed triangles = *E. piratula*. Open circles = *E. caldwelli*. Closed circles = *E. hyltoni*.

Pelvic fins pigmented at base and lightly along rays. Caudal-fin membrane pigmented only on distal half.

Color in life (taken from 35 mm. Kodachrome of holotype).—Body cream, overlaid with numerous, small, scattered melanophores concentrated into faint, irregular bars extending anteriorly from bases of dorsal and anal-fin rays toward midline at an angle of 74°. Ventral body surface from anus to isthmus darker than lateral surface, with many closely set melanophores. Two longitudinal rows of white spots about one-half diameter of pupil extending posteriad from each side of head onto body: dorsolateral row adjacent to dorsal-fin base, consisting of 14 spots, extending from just below first dorsal-fin spine to just below eighth soft dorsal-fin ray; midlateral row consisting of seven spots, originating on posterior edge of preopercle and extending posteriad along midlateral line to under base of 20th dorsal-fin spine. A series of small, burnt-orange spots alternating with white spots in dorsolateral row. A single, small, burnt-orange spot between first and second white spots of midlateral row. A larger white spot equal to three-fourths of pupil diameter directly

anterior to pectoral-fin base, preceded by a single, large, burnt-orange spot. Head cream, overlaid with numerous, small, scattered melanophores as on body. A series of six small white spots on posterior edge of preopercle, dorsalmost also first white spot of dorsolateral row on body, and third spot (proceeding ventrally) also first white spot of midlateral row on body. Operculum with burnt-orange tinge at midline. Interorbital area, snout, upper and lower jaws densely pigmented with numerous fine melanophores. A black ring surrounding eye and connecting the densely pigmented areas. Pupil black, iris yellow with scattered melanophores distally. Elongate anterior portion of spinous dorsal fin black, crossed by 11 white bars. Remaining dorsal-fin membranes black basally; distal membrane between seventh and 15th spines clear with scattered melanophores, remainder of membrane black. Last seven dorsal-fin spines and all soft dorsal-fin rays tipped with white. Anal fin black with white margin. Basal half of caudal fin clear, distal half black. Caudal-fin rays with white tips. Pectoral fin clear. Pelvic fins black at base and on anterior edge, remainder of fin clear.

Sexually dimorphic characters.—All five specimens of *E. hyltoni* exhibit a well-developed genital papilla and are therefore males (Stephens, 1963). It is unfortunate that no female specimens are available because the genus *Emblemaria* is noted for a high degree of sexual dimorphism. For those characters known to be sexually dimorphic in other species of *Emblemaria* (morphometric characters), our comparisons of *E. hyltoni* with *E. caldwelli* are limited to male specimens of the latter species.

Etymology.—We are pleased to name this species for Nick Hylton, who donated his services as captain and crew of the yacht *M/S Miss Sabrina* during the Miskito Coast Expedition, aided in field work, saved the expedition at Brus Lagoon, will never forget Trujillo, and without whose assistance the expedition would not have been as successful.

DIAGNOSTIC COMPARISONS

The addition of *Emblemaria hyltoni* brings the total number of recognized species of *Emblemaria* to 13, eight in the western Atlantic and five in the eastern Pacific. Five of the Atlantic species (*E. atlantica* Jordan and Evermann, *E. biocellata* Stephens, *E. culmensis* Stephens, *E. diphyodontis* Stephens, *E. pandionis* Evermann and Marsh) and all of the eastern Pacific species (see Stephens, 1963) may be distinguished from *E. hyltoni* by possession of a normal, easily visible third soft pelvic-fin ray. The third soft pelvic-

fin ray is vestigial and not readily observable in *E. caldwelli*, described from 12 specimens from Jamaica and the Bahamas (Stephens, 1970), and in *E. piratula*, described from 12 specimens from off western Florida (Ginsburg, 1942).

E. piratula may be easily distinguished from *E. caldwelli* and *E. hyltoni* as follows: dorsal-fin spines 18-19 (18-20 reported) *vs.* 21-23; pectoral-fin rays 13 *vs.* 14; total dorsal + anal-fin rays 56-57 *vs.* 58-62; commissural pores 3 *vs.* 1 (fig. 1).

All three species differ in the form of the spinous dorsal fin (fig. 3), which is high and sail-like in *E. piratula*, and relatively low and not markedly sail-like in *E. caldwelli*. *E. hyltoni* is unique in the genus *Emblemaria* in the remarkable prolongation of the first and second dorsal-fin spines and further differs from *E. caldwelli* and *E. piratula* in exhibiting a noticeable gap between the bases of the first three dorsal-fin spines and the rest of the spinous dorsal fin.

E. piratula and *E. caldwelli* differ from *E. hyltoni* in the placement of the lateral supratemporal pores (figs. 1,4): distinctly anterior to dorsal insertion *vs.* distinctly posterior to dorsal insertion; angle formed by line segments connecting each of the lateral supratemporal pores to the dorsomedial supratemporal pore 118°-164° *vs.* 79°-86° (fig. 4).

E. caldwelli and *E. hyltoni* differ modally in counts of total dorsal-fin rays, soft anal-fin rays, and total dorsal + anal-fin rays (table 1). *E. caldwelli* differs from *E. hyltoni* in the following proportional measurements (listed as thousandths of the S.L.): head width, 147-175 *vs.* 131-147; interorbital width, 19-24 *vs.* 26-28; length of longest pectoral-fin ray, 158-173 *vs.* 123-144; length of longest pelvic-fin ray, 213-264 *vs.* 267-306; length of first dorsal-fin spine, 151-187 *vs.* 676-751; length of second dorsal-fin spine, 167-213 *vs.* 284-367; length of last dorsal-fin spine, 46-78 *vs.* 84-101.

DISCUSSION

A brief inspection of the morphometric data given in Table 2 shows that the values reported by Stephens (1970) for certain characters for the type series of *E. caldwelli* differ markedly from our values for specimens from Belize. This is especially true in the case of upper jaw length, eye diameter, snout length, and interorbital width, in which the two sets of values differ without overlap, but is also true in the case of several other characters. The values given for the type series of *E. caldwelli* in Table 2 were provided by Stephens (pers. comm.) at our request. This was necessary because, due to a

TABLE 3. Proportional measurement data for two paratypes of *E. caldwelli*. Stephen's (pers. comm.) values are given in parentheses. Values expressed as thousandths of the S. L.

Character	UF 13611 ♂ (24.8)	UF 13714 ♀ (22.1)	Belize Material
Head length	270 (269)	271 (277)	257 - 302
Head depth	169 (209)	163 (170)	160 - 176
Head width	157 (138)	149 (147)	147 - 175
Upper jaw length	117 (138)	124 (143)	107 - 138
Eye diameter	68 (87)	73 (80)	66 - 78
Snout length	52 (79)	56 (80)	50 - 62
Interorbital width	22 (40)	22 (36)	19 - 24
Predorsal length	202 (209)	213 (210)	191 - 225
Preanal length	468 (482)	489 (478)	469 - 514
Caudal peduncle depth	88 (87)	82 (89)	78 - 100
Caudal peduncle length	86 (87)	82 (89)	77 - 106
Pectoral length	149 (186)	145 (143)	158 - 173
Pelvic length	250 (249)	262 (290)	213 - 264
Length of first dorsal spine	161	167	151 - 187
Length of second dorsal spine	169 (194)[1]	176 (179)[1]	167 - 213
Length of last dorsal spine	78	64	46 - 78
Length of first dorsal soft ray	107	93	88 - 108
Orbital cirrus length	107 (126)	102 (112)	78 - 113
Nasal cirrus length	44 (103)	76 (67)	54 - 71

[1]Reported as "dorsal spine length."

printing error, half of the values given in the original description (Stephens, 1970, table 8) are obviously unuseable.

Stephens kindly made available to us two paratypes of *E. caldwelli* (UF 13611, 24.8 mm. S.L., male; UF 13714, 22.1 mm. S.L., female) re-measured by us. Our values are compared with those of Stephens in Table 3. Our values for these specimens agree very well with those for the Belize specimens. This result eliminated our concern about the conflicting morphometric data and about assigning the Belize material to *E. caldwelli.*

We note that values for the angle formed by the supratemporal pore series (UF 13611, 121°; UF 13714, 130°) in the two paratypes are in perfect agreement with Belize material of *E. caldwelli* (fig. 4). We also note that the correct dorsal-fin ray count for the female paratype, UF 13714, is XXII + 14, not XXIII + 13, as reported by Stephens (1970, p. 304).

COMPARATIVE MATERIAL EXAMINED

E. caldwelli. Paratypes. UF 13611 (1), UF 13714 (1).

E. caldwelli. Belize. A total of 49 (15.1-27.2) specimens from 12 collections. All specimens from either Lighthouse Reef (2 collections, 16 specimens) or Glover's Reef (10 collections, 33 specimens). FMNH 71118 (1), FMNH 71135 (3), FMNH 71137 (3), FMNH 71140 (1), FMNH 71152 (2), FMNH 77560 (7), FMNH 77561 (4), FMNH 77562 (1), FMNH 77563 (3), FMNH 77564 (8), FMNH 77589 (8), FMNH 80414 (8).

E. piratula. Florida. USA 01898, 23 miles SSE Navarre, Fla., otter trawl: 25 fms., July 29, 1975, (8); USA 2578, field number 100-74, 18 miles SE Pensacola, Fla., otter trawl; 60 ft., August 5, 1974, (1).

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